

### REMARKS

Responsive to the Office Action mailed June 9, 2004, please enter the amendments made herein and reconsider the merits of the application in view of the following remarks.

#### Objection to Drawings

The Examiner objected to the drawings for having certain deficiencies.

In response, attached hereto is a Proposed Drawing Correction to change Fig. 3 to Fig. 3A and add Fig. 3B. Fig. 3B shows an embodiment similar to Fig. 3A except that it depicts a concave-shaped rotor body. Support for concave shape 71 can be found throughout the specification, for example, at page 8, lines 7-11 of the specification. Further, the specification has been amended herein to make reference to Figs. 3A and 3B. No new matter has been added. Changes to Fig. 3 are shown in red ink. The Examiner's review and approval of the correction are respectfully requested.

The Proposed Drawing Correction also shows "inner opening 62" in Fig. 2.

Finally, the specification has been amended to make reference to concave shape 70 appearing in Figure 3.

Reconsideration and withdrawal of the drawing objections are respectfully requested.

Anticipation Rejection

Claims 1-2, 4, 6-8, 12, 14, 16-20 stand rejected as allegedly anticipated by U.S. Patent No. 6,441,524 to Kaneko et al. ("Kaneko"). Claims 1-2, 4-8, 12-14 and 16-20 stand rejected as allegedly anticipated by U.S. Patent No. 6,445,100 to Tajima et al. ("Tajima"). Finally, claims 1, 3, 5-10, 12, 14, 16-18 and 21 stand rejected as allegedly anticipated by Patent No. GB 1,503,708 ("the '708 patent").

Applicant respectfully disagrees with the grounds of this rejection.

The claimed embodiments generally relate to a rotor assembly for use with an electromagnetic motor. Referring to the exemplary embodiment of Fig. 1, stator 10 is shown separated from rotor 12 by air gap 56. The embodiment of Fig. 2, shows Rotor 12 with six slots 58. As shown, slot 58 extends from inner opening 62 to the outer periphery of the Rotor 12. Inner opening 62 receives the motor shaft. Thus, each of magnets 20 and 22 extend from the inner opening 62 to the outer periphery of Rotor 12. Each slot 58 is also shown with enlarged width end section 50 which can improve the efficiency of the electrical motor and eliminate or reduce the cogging torque.

The claimed embodiments are advantageous over the art of record in that they enable a simple insertion of the permanent magnets into the slots from the inner openings of the rotor body. The permanent magnets are securely held in the slots and are protected against mechanical and electromagnetic damage by the outer periphery of the rotor body. Furthermore, the claimed arrangements are particularly advantageous for controlling the magnetic flux distribution. Since shaft 14 (see Fig. 1) can be made from a non-magnetic material, magnetic short does not form at the inner opening of the rotor. As a result, the strength of the magnetic field at the outside of the rotor can be increased thereby increasing the motor's power. Another advantage of the claimed embodiments is that the formation of magnetic stray flux can be prevented or suppressed at the hub and at the shaft. The suppression occurs even when the shaft is made of a magnetic material.

Kaneko is directed to rotors for a synchronous motor. Referring to Fig. 8 of Kaneko (cited by the Office), rotor core 17 is shown to have magnets 73 embedded therein. Hollow part 83 is formed in core 17 facing end faces 75 of magnet 73. See Kaneko Col. 5, lines 23-26. Kaneko does not disclose or suggest each and every element of the independent claims. Among others, the reference fails to disclose or suggest “a plurality of slots are provided in the body, said plurality of slots extending from said inner opening towards the outer periphery of said body” as recited in claim 1 (emphasis added). Instead, the reference shows permanent magnets fully embedded in the rotor core. Each of independent claims 12 and 16 have similar recitations which, for the sake of brevity, will not be repeated here. Accordingly, Kaneko does not anticipate the independent claims or any claim depending therefrom.

Tajima suffers from the same deficiencies as Kaneko. Referring to Fig. 9 of Tajima (as cited by the Office), rotor 30 is shown to have permanent magnets 36 inserted in insertion holes 34. A pair of slits 62 and 64 formed at both ends of the insertion holes 34. Tajima does not disclose nor suggest each and every element of the independent claims. Among others, the reference fails to disclose or suggest “a plurality of slots are provided in the body, said plurality of slots extending from said inner opening towards the outer periphery of said body” as recited in claim 1 (emphasis added). Instead, the reference shows permanent magnets 36 fully embedded in the rotor core. Accordingly, Tajima does not anticipate the independent claims or any claim depending therefrom.

The ‘708 patent is directed to rare earth permanent magnet rotor for dynamo electric machines. Referring to Fig. 1, the reference shows a rotor lamination 200 having a set of equally spaced slots 201 for receiving rare earth magnetic material. See col. 2, lines 124-129. Also shown are slots 202 adapted to receive molten material, preferably aluminum. During manufacturing, a stack of laminations 200 of desired size is assembled. Next, pieces of rare earth magnetic material are inserted into the slots 201 to

buildup a column of the height of the stack of the laminations. Thereafter, a shaft is positioned inside at the center of the array. Finally, a non ferrous material such as aluminum is poured, in molten state, to fill slots 202 and rendering a rigid rotor structure. See col. 3, lines 1-63. Fig. 1b shows an assembled rotor having magnets 203 and slots 201 and 202 filled with aluminum.

The '708 patent fails to anticipate the independent claims as it fails to disclose, among others, "a plurality of slots are provided in the body, said plurality of slots extending from said inner opening towards the outer periphery of said body" as recited in claim 1 (emphasis added). As seen in Fig. 1b, magnet 203 is positioned in slot 201. Slot 201 does not extend from the inner opening 204 as claimed in claim 1. Instead, the magnets are fully embedded in a non-ferrous material. Each of independent claims 12 and 16 have similar recitations which, for the sake of brevity, will not be repeated here. Thus, the '708 patent does not anticipate the independent claims or any claim depending therefrom.

For the reasons presented herein, Applicant respectfully requests reconsideration and withdrawal of the anticipation rejection.

#### Obviousness Rejection

Claims 11 and 15 stand rejected as allegedly unpatentable over various combinations of references cited.

Each of claims 11 and 15 depends from independent claim 1 which is deemed patentable for the reasons discussed above. Thus, claims 11 and 15 are deemed patentable at least by the virtue of their dependence from claim 1. Reconsideration and withdrawal of the obviousness rejection of claims 11 and 15 are respectfully requested.

### CONCLUSION

Having addressed each and every issue raised by the Office, Applicant deems the application in condition for allowance and respectfully solicits a notice to this effect.

Although an extension of time is not deemed necessary, the Office is hereby requested and authorized to charge any extension of time fees, or any other fee required to maintain the application pending, against Deposit Account No. 04-1679 to Duane Morris LLP.

The Examiner is invited to contact the undersigned to discuss any issues pertaining to the instant application.

Respectfully submitted,



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"Annotated Marked-up Drawing"

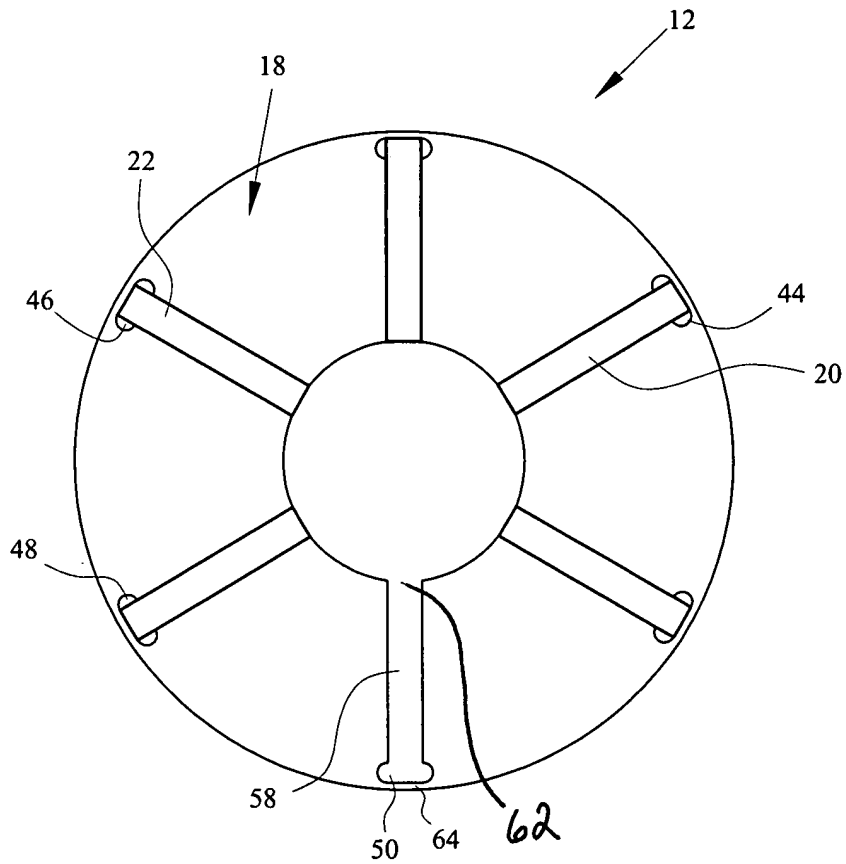
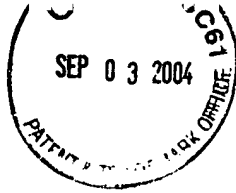


FIG. 2



"Annotated Marked-up Drawing"

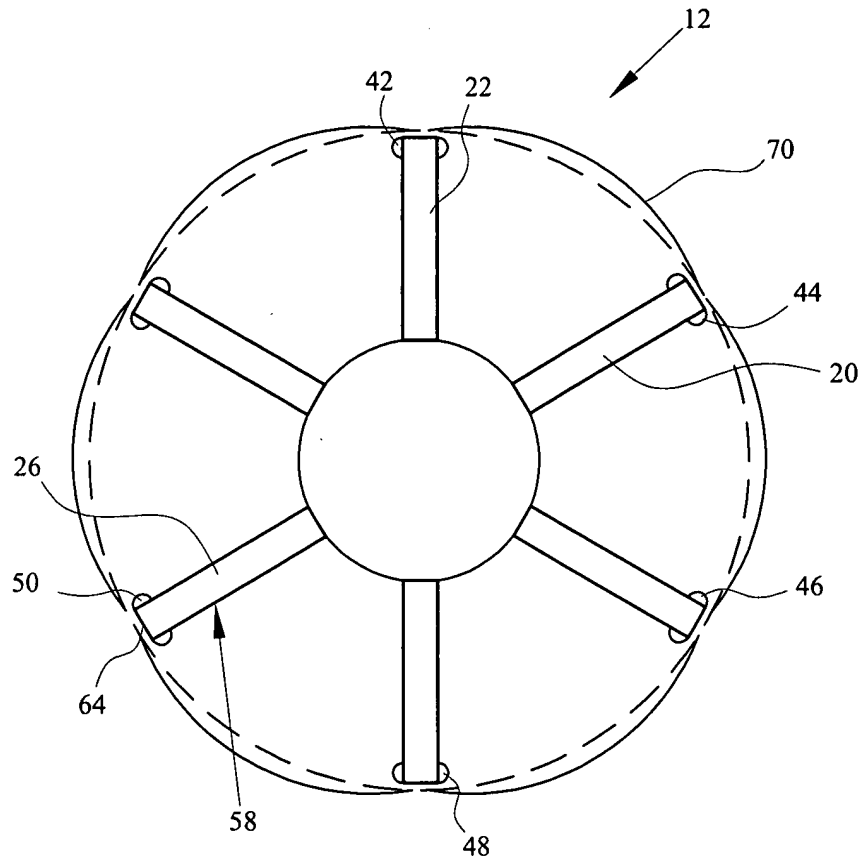


FIG. 3A